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ORIGINAL
(Red)

#427873

A PRELIMINARY ASSESSMENT
OF
CROWN CENTRAL PETROLEUM CORPORATION
1622 SOUTH CLINTON STREET
BALTIMORE, MARYLAND

ML-113

Final Report
August 1984

Prepared by: Maryland Waste Management Administration
201 West Preston Street
Baltimore, Maryland 21201

For: U.S. Environmental Protection Agency
Region III
6th and Walnut Streets
Philadelphia, Pennsylvania 19106

Crown Central Petroleum Corporation
1622 South Clinton Street
Baltimore, Maryland

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Summary and Recommendations

Summary

The Crown Central Petroleum Corporation purchased parcels of land which are presently known as 1622/1632 S. Clinton Street. Crown operated a fuel storage terminal at this site from 1947 through 1968. The property was unused from 1968 through 1970 when Crown leased it to Petroleum Marketing Corporation, a subsidiary of Petroleum Fuel and Terminal Corporation.

Petroleum Marketing operated the site until April of 1978 at which time they sold the site to Petroleum Fuel and Terminal Corporation, who are the present owners and occupants of the site.

During the years of operation, Crown states that common industry practice was to dispose of leaded tank bottoms by weathering and burial. Crown is unable to locate burial pits at this site, nor are they able to supply estimates of materials alleged to have been buried.

When Petroleum Fuel and Terminal took over the site, no weathering areas or burial pits were discovered. An open area at the Northwest corner of the property appeared to be a rubble fill, according to James Thompson, present Terminal Manager, containing ores and slags from the late 19th century copper and steel works. Since 1978, about 95% of this open area has been dynamically compacted to a depth of six to seven feet and two 175000 bbl storage tanks have been erected.

Recommendations

While it is certain that leaded tank bottoms have been buried on this site, it is impossible to accurately locate burial sites.

This facility is considered a low priority site for a site investigation to determine what wastes remain on site.



**POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT**

I. IDENTIFICATION
01 STATE (US SITE NUMBER)
MD *

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site) Crown Central Petroleum Corporation		02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER 1622 S. Clinton Street			
03 CITY Baltimore	04 STATE MD	05 ZIP CODE 21224	06 COUNTY Baltimore City	07 COUNTY CODE	08 CONG. DIST.
09 COORDINATES LATITUDE 7 6 3 5" 4 5'		LONGITUDE 3 9 1 6" 2 4'			
10 DIRECTIONS TO SITE (Starting from nearest public road) From intersection of Boston and South Clinton Streets proceed south on Clinton Street approximately two blocks to site					

III. RESPONSIBLE PARTIES

01 OWNER (if owner) Crown Central Petroleum Corporation		02 STREET (Business, mailing, residential) 1 North Charles Street			
03 CITY Baltimore	04 STATE MD	05 ZIP CODE 21201	06 TELEPHONE NUMBER (301) 539-7400		
07 OPERATOR (if owner and operator from owner) Petroleum Fuel and Terminal Corporation		08 STREET (Business, mailing, residential) 1622 South Clinton Street			
09 CITY Baltimore	10 STATE MD	11 ZIP CODE 21224	12 TELEPHONE NUMBER (301) 342-7800		
13 TYPE OF OWNERSHIP (Check one) <input type="checkbox"/> A. PRIVATE <input type="checkbox"/> B. FEDERAL: _____ (Agency name) <input checked="" type="checkbox"/> C. STATE <input type="checkbox"/> D. COUNTY <input type="checkbox"/> E. MUNICIPAL <input type="checkbox"/> F. OTHER: _____ (Specify) <input type="checkbox"/> G. UNKNOWN					
14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply) <input type="checkbox"/> A. RCRA 3001 DATE RECEIVED: _____ MONTH DAY YEAR <input checked="" type="checkbox"/> B. UNCONTROLLED WASTE SITE (RCRA 103) DATE RECEIVED: 6, 5, 81 MONTH DAY YEAR <input type="checkbox"/> C. NONE					

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON-SITE INSPECTION <input checked="" type="checkbox"/> YES DATE 9, 16, 83 MONTH DAY YEAR <input type="checkbox"/> NO		02, Check all that apply <input type="checkbox"/> A. EPA <input type="checkbox"/> B. EPA CONTRACTOR <input checked="" type="checkbox"/> C. STATE <input type="checkbox"/> D. OTHER CONTRACTOR <input type="checkbox"/> E. LOCAL HEALTH OFFICIAL <input type="checkbox"/> F. OTHER: _____ (Specify) CONTRACTOR NAME(S): _____			
02 SITE STATUS (Check one) <input type="checkbox"/> A. ACTIVE <input checked="" type="checkbox"/> B. INACTIVE <input type="checkbox"/> C. UNKNOWN		03 YEARS OF OPERATION BEGINNING YEAR 1947 1968 ENDING YEAR <input type="checkbox"/> UNKNOWN			
04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED Crown Central Petroleum Corporation indicates that leaded gasoline tank bottoms ((K052)Lead) were disposed on site by weathering and burial.					
05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION Potential for the contamination and pollution of the Patapsco River (Inner Harbor) exists due to the proximity of the site to the river.					

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents) <input type="checkbox"/> A. HIGH (Inspection required promptly) <input type="checkbox"/> B. MEDIUM (Inspection required) <input checked="" type="checkbox"/> C. LOW (Inspect on time schedule basis) <input type="checkbox"/> D. NONE (No further action needed, complete current disposition form)					
VI. INFORMATION AVAILABLE FROM					
01 CONTACT Gregory Yawman		02 OF (Agency/Organization) Crown Central Petroleum Corporation		03 TELEPHONE NUMBER 801, 539-7400	
04 PERSON RESPONSIBLE FOR ASSESSMENT Michael Broumberg		05 AGENCY DHMH	06 ORGANIZATION WMA	07 TELEPHONE NUMBER (301) 383-6650	08 DATE 12, 29, 83 MONTH DAY YEAR

EPA Potential Hazardous Waste Site Identification and Preliminary Assessment Addendum

III. Responsible Parties

Crown Central Petroleum Corporation, 1 N. Charles Street, Baltimore, Maryland 21201, was the owner and operator of a site located at 1622 South Clinton Street from 1947 to 1968. The site is presently owned and operated by Petroleum Fuel and Terminal Corporation, a subsidiary of the Apex Oil Company.

IV. Characterization of Potential Hazard

04. Description of substances possibly present, known or alleged; Crown Central Petroleum Corporation was unable to locate the site of disposal or to estimate quantity of material disposed.

Attached correspondence reflects that material was definitely buried at the Clinton Street site.

See also attached monograph concerning weathering and burial of tank bottoms.



I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MD	

01 PHYSICAL STATES (CHECK AS MOST APPLY)

- | | |
|---|------------------------------------|
| <input type="checkbox"/> A. SOLID | <input type="checkbox"/> E. SLURRY |
| <input type="checkbox"/> B. POWDER, FINES | <input type="checkbox"/> F. LIQUID |
| <input type="checkbox"/> C. SLUDGE | <input type="checkbox"/> G. GAS |
| <input type="checkbox"/> D. OTHER _____ | |

02 WASTE QUANTITY AT SITE

(MEASURES OF WAGE CHANGES
THAT DO NOT EXIST)

TONS

CURRICULAR YARDS

NO. OF CRIMS

03 WASTE CHARACTERISTICS (Check all that apply)

- | | | |
|---|--|---|
| <input type="checkbox"/> A. TOXIC | <input type="checkbox"/> E. SOLUBLE | <input type="checkbox"/> I. HIGHLY VOLATILE |
| <input type="checkbox"/> B. CORROSIVE | <input type="checkbox"/> F. INFECTIOUS | <input type="checkbox"/> J. EXPLOSIVE |
| <input type="checkbox"/> C. RADIOACTIVE | <input type="checkbox"/> G. FLAMMABLE | <input type="checkbox"/> K. REACTIVE |
| <input type="checkbox"/> D. PERSISTENT | <input type="checkbox"/> H. IGNITABLE | <input type="checkbox"/> L. INCOMPATIBLE |
| | | <input type="checkbox"/> M. NOT APPLICABLE |

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE	Unknown		Reporting Corporation is unable
OLW	OILY WASTE			to determine amount or location
SOL	SOLVENTS			of disposed substances
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

[illegible]

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS	N/A		FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

CERCLA report submitted by Crown Central Petroleum Corporation

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**POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS**

I. IDENTIFICATION

01 STATE MD	02 SITE NUMBER
----------------	----------------

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 <input checked="" type="checkbox"/> A. GROUNDWATER CONTAMINATION	02 <input type="checkbox"/> OBSERVED (DATE: _____)	<input checked="" type="checkbox"/> POTENTIAL	<input type="checkbox"/> ALLEGED
03 POPULATION POTENTIALLY AFFECTED: <u>Unknown</u>	04 NARRATIVE DESCRIPTION		

While no groundwater contamination was observed, it might be possible for leaded tank bottoms to migrate to groundwater.

01 <input type="checkbox"/> B. SURFACE WATER CONTAMINATION	02 <input type="checkbox"/> OBSERVED (DATE: _____)	<input type="checkbox"/> POTENTIAL	<input type="checkbox"/> ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____	04 NARRATIVE DESCRIPTION		

01 <input type="checkbox"/> C. CONTAMINATION OF AIR	02 <input type="checkbox"/> OBSERVED (DATE: _____)	<input type="checkbox"/> POTENTIAL	<input type="checkbox"/> ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____	04 NARRATIVE DESCRIPTION		

01 <input type="checkbox"/> D. FIRE/EXPLOSIVE CONDITIONS	02 <input type="checkbox"/> OBSERVED (DATE: _____)	<input type="checkbox"/> POTENTIAL	<input type="checkbox"/> ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____	04 NARRATIVE DESCRIPTION		

01 <input type="checkbox"/> E. DIRECT CONTACT	02 <input type="checkbox"/> OBSERVED (DATE: _____)	<input checked="" type="checkbox"/> POTENTIAL	<input type="checkbox"/> ALLEGED
03 POPULATION POTENTIALLY AFFECTED: <u>10</u>	04 NARRATIVE DESCRIPTION		

It might be possible for an employee to directly contact buried tank bottoms if the employee would be excavating in an area where tank bottoms are buried.

01 <input type="checkbox"/> F. CONTAMINATION OF SOIL	02 <input type="checkbox"/> OBSERVED (DATE: _____)	<input type="checkbox"/> POTENTIAL	<input type="checkbox"/> ALLEGED
03 AREA POTENTIALLY AFFECTED: _____ (Acres)	04 NARRATIVE DESCRIPTION		

01 <input type="checkbox"/> G. DRINKING WATER CONTAMINATION	02 <input type="checkbox"/> OBSERVED (DATE: _____)	<input type="checkbox"/> POTENTIAL	<input type="checkbox"/> ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____	04 NARRATIVE DESCRIPTION		

01 <input checked="" type="checkbox"/> H. WORKER EXPOSURE/INJURY	02 <input type="checkbox"/> OBSERVED (DATE: _____)	<input checked="" type="checkbox"/> POTENTIAL	<input type="checkbox"/> ALLEGED
03 WORKERS POTENTIALLY AFFECTED: <u>Unknown</u>	04 NARRATIVE DESCRIPTION		

See "E" above

01 <input type="checkbox"/> I. POPULATION EXPOSURE/INJURY	02 <input type="checkbox"/> OBSERVED (DATE: _____)	<input type="checkbox"/> POTENTIAL	<input type="checkbox"/> ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____	04 NARRATIVE DESCRIPTION		

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POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
MD	

HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ K. DAMAGE TO FAUNA 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION (Include number(s) of specimen)

01 ☐ L. CONTAMINATION OF FOOD CHAIN 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES
(Soils, runoff, standing liquids, leaking drums)
04 POPULATION POTENTIALLY AFFECTED: _____ 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☐ N. DAMAGE TO OFFSITE PROPERTY 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

01 ☒ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Storm water drains from dike areas to Patapsco River via storm drain

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

06 TOTAL POPULATION POTENTIALLY AFFECTED: _____

07 COMMENTS

08 SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

CERCLA Notification Form

FIELD TRIP SUMMARY REPORT

This summary should be prepared in conjunction with the Preliminary Assessment Form, (EPA Form T2070-2), so that a proper site rating can be assigned.

Name of Site Crown Central Petroleum Corporation

EPA Case Number _____

- I. If site is active, has owner/operator notified EPA in accordance with Section 3010 of RCRA. Yes _____ No _____

If Yes: a) Note EPA I.D. No. _____

b) Is the site a generator, storer, treater or disposer of hazardous waste? (CIRCLE ONE).

- II. If the answers submitted in Part VI (Hazard Description) of EPA Form T2070-2 or observations warrant a more thorough site investigation/sampling, please attach a sketch map showing those areas of concern. (i.e.: lagoons, leachate seeps, drum storage, monitoring wells, etc.).

- III. Please list site contacts and accompanying inspectors; include name, title and phone numbers. 9/16/83 James Thompson, Terminal Manager, Petroleum Fuel and

Terminal Corporation (301)-342-7800

9/29 Crown Central Petroleum Corporation, Corporate Offices, Gregory Yawman,

Sharon Kirk, Attorney - 539-5118

- IV. Site observations: (attach a topo map). USGS 7½ quad. attached (portion thereof)

A. Population within 1000 ft. of the site is (CHECK ONE)

1. 0-10 people Three people occupy residence at 1603 S. Clinton Street
2. 10-100 people
3. greater than 100 people Employees of various industries in area

- B. List surrounding land use: (woodlot, agricultural, playground, industrial, etc.)

North: Industrial - Exxon terminal

South: Industrial - Gulf terminal

East: Industrial (1 residence & 1 food shop) - Exxon, Petroleum Fuel Terminal

West: Patapsco River (Inner Harbor)

Page 2

1. Surface intakes (locate on attached map)
2. Municipal wells (locate on attached map)
3. Domestic wells:

- | | | | |
|----------------|--------------------------------------|--------------|--------------|
| Property owner | <u>Exxon</u> | <u>Exxon</u> | <u>Exxon</u> |
| Address | <u>3801 Boston Street (see note)</u> | | |
| Phone No. | <u>(301) 563-5118</u> | | |

Well records available YES _____ NO _____ YES _____ NO _____ YES _____ NO _____
 Odor problems YES _____ NO _____ YES _____ NO _____ YES _____ NO _____
 Taste problems YES _____ NO _____ YES _____ NO _____ YES _____ NO _____

- c. If odor or taste problems are reported please elaborate: N/A

D. Are surface or subsurface, (leachate), drainage areas from site apparent?
YES NO * If yes:

1. Were unusual odors or stains noted? YES _____ NO _____
2. Was stressed vegetation noted? YES _____ NO _____

- a. If yes please note area on map.

E. Are streams or receiving waters adjacent to site? YES * NO
If yes, list observations: (i.e.-change in benthic community, change in plant density/diversity, change in color, siltation, etc.). Site location is
contiguous with the Patapsco River (Inner Harbor). A storm drain inlet is situated
on site discharging to Inner Harbor. There is nothing unusual about the adjacent
receiving waters.

F. Site topography: (i.e.-plateau, strip mine ravines, etc.).The site is situated on created land composed of fill material and is part of a flat, coastal plain.

G. Other observations: (i.e.-erosion, located in flood plain, etc.).
Small portion of site is located in the 100 year flood plain of the Pataspco River (Inner Harbor).

FIELD TRIP SUMMARY REPORT

Page 3

- V. Were photographs taken? YES * NO
If yes: Who has custody of photos?

Name: Waste Management Administration, Office of Environmental Programs

Agency: Department of Health and Mental Hygiene

Phone No.: (301)-383-6650

- VI. Is a hydrogeological survey for this site attached? YES NO *
If no, Section III D of EPA Form T2070-2 must be completed.

- VII. Please attach pertinent copies of reports or data reviewed by inspector:
(i.e.-State monitoring data, consultant reports, etc.).

- VIII. Name of Inspector: Michael M. Broumberg
Waste Management Administration, Office of Environmental Programs,
Agency: Department of Health and Mental Hygiene

Phone No.: (301)-383-6650

Time on Site: September 16, 1983 (1015 hours)

Weather Conditions: Sunny with temperature of 72 degrees °F

Field Trip Summary Report (Addendum)

1. As concerns Crown Central Petroleum Corporation, the site is inactive. Crown Central Petroleum Corporation was a treater and disposer of leaded tank bottoms by weathering and burial.

The present operator of the site, Petroleum Fuel and Terminal Corporation, is a generator (MDD 091810581).

IVAl. Population. The dwelling at 1603 S. Clinton Street is served by municipal water and sewerage according to Mrs. Hoover, Office Manager, Petroleum Fuel and Terminal Corporation.

IVC. Well Information. Since 1973, 14 wells have been installed on Exxon property for oil recovery, seven wells are presently in service. There are no domestic or municipal wells within 1/4 mile of site.

WELLS WITHIN 1/4 MILE CROWN CENTRAL PETROLEUM SITE
EXXON COMPANY, U.S.A. - BALTIMORE TERMINAL

OIL RECOVERY WELL SYSTEM
MONTHLY OIL PRODUCTION SUMMARY

1ST QUARTER, 1983

(GALLONS OF OIL RECOVERED)

ACTIVE WELL NO.	CUMULATIVE TOTAL VOLUME RECOVERED (END OF 4TH QTR. 1982)	MONTHLY BREAKDOWN - 1ST QTR., 1983			CUMULATIVE TOTAL VOLUME RECOVERED (END OF 1ST QTR. 1983)
		JANUARY	FEBRUARY	MARCH	
1*	24,442	248	42	2	24,734
2**	1,193	25	23	0	1,241
5	18,489	883	-478	492	20,342
6	13,141	318	291	346	14,096
7	4,127	323	20	166	4,636
8	26,440	1,470	1,088	4,228	33,226
9	4,214	471	170	80	4,935
TOTALS	92,046	3,738	2,112	5,314	103,210

* Well #1 is presently out-of-service.

** Well #2 is in service, but oil production was negligible in March, 1983.

PERFORMANCE OF A PRELIMINARY ASSESSMENT1. Background Information Reviewa. Hydrology

1. Fault Zone N/A
2. Karst Zone N/A
3. 100 Yr. Flood Plain See attached floodplain map
4. Regulated Floodway N/A
5. Wetland N/A
6. Recharge Zone N/A
7. Soil Characteristics Arundel formation. Clay facies 0.5 to 10 meters thick. Immediate shoreline is artificial fill.
8. Direction of GW/SW Flow Surface water flows to Patapsco River via runoff and storm drains. Groundwater is in an unconsolidated aquifer.
9. Depth to Ground Water Varies 50-300'
10. Use of GW N/A
11. Aquifer Yield N/A
12. Distance to GW/SW Use There is an oil recovery well system on Exxon terminal within 1/4 mile
13. Recharge/Discharge Area N/A
14. Site Slope Flat coastal plain slope 0° to 5°
15. SW Intakes N/A

(2)

000000
(0000)b. Flora/Fauna

1. Endangered Species N/A
2. Indicator Species N/A
3. Critical Habitat N/A

c. Site History

1. State/Local Chronology of Events _____

See attached narrative

2. Permits - all under Petroleum Fuel and Terminal Corp.

- a. NPDES 80-DP-1688
- b. SPCC Plan Submitted with oil permit number
- c. State Permits _____
- d. Air Permits X01923-00026

3. Legal Action N/A

4. Sampling Results N/A

d. Known or Alleged Hazards

1. Illness Clusters None
2. Cancer Studies None
3. Health Dept. Records None

4. Fish Kills None
5. Worker/Non-worker Injury None

2. Administrative Information

- a. Facility Name Crown Central Petroleum Corporation
- b. Address 1622 S. Clinton Street, Baltimore, MD 21224
- c. Latitude 39 ° 16 " 34 " / longitude 76 ° 35 " 45 "
- d. Responsible Party
1. Owner Crown Central Petroleum Corporation, I. N. Charles St., Balto, MD
 2. Realty Company N/A 21201
 3. Generators N/A
- e. Type of Operation
1. Generator
 - a. Waste Type/Source/Amount Leaded tank bottoms from tank cleaning - quantity unknown
 - b. Waste Disposition Buried on site
 2. Storage N/A
 3. Treatment/Disposal N/A
 - a. Incineration
 - b. Landfill
 - c. Landfarm
 - d. Biological Treatment
 - e. Chemical Treatment
 - f. Deep Well Injection
 - g. Surface Impoundment
 - h. Other

f. Site Activity Status

1. Active _____
2. Inactive X

g. Personnel Present During Inspection

1. Name James Thompson /
2. Address 1622 S. Clinton Street, Balto, MD 21224 /
3. Work Phone (301) 342-7800 /
4. Title Petroleum Fuel and Terminal Manager /

h. Inspection Information

1. Access
 - a. Warrant _____
 - b. Permission By Mr. Thompson
2. Photographs
 - a. Permitted X
 - b. Prohibited _____
 - c. Other _____

3. Field Evaluation

a. Evidence of Contamination

1. Soil None
2. Runoff None
3. Spills None
4. Air Emissions None
5. Erosion None
6. Ponding None
7. Charred Areas None

b. Maintenance, operation of run-off collection and control systems

Storm drains feed to oil separator which discharges to Patapsco River.

Routinely maintained.

c. Demographics (Refer to Field Trip Summary Report, Section IV.,
Site Observations.

Site History

Crown Central Petroleum Corporation purchased several parcels of land which are known as 1622 S. Clinton Street. See Baltimore City land records MLP 6772/203 and MLP 7546/323.

Crown Central Petroleum Corporation operated a terminal at this site from 1947 to 1968. According to Crown, the acceptable industry practice at that time for disposal of leaded tank bottoms consisted of weathering followed by burial. The terminal was unused from 1968 to 1970 when it was leased to Petroleum Fuel and Terminal Corporation, who subsequently bought the property in 1973. Petroleum Fuel and Terminal demolished a metal shed and built tanks 175-15 + 175-18 (see site drawing).

RECEIVED

MAY 27 1981

TO MR. G. L. SHAW

DATE MAY 27, 1981

E. P. MAMPE
REC'D.SUBJECT: SUPERFUND NOTIFICATIONS

MAY 27 1981

G. L. SHAW

In accordance with your request a complete and detailed search has been made of all available files, as well as interrogatories with present and former employees, regarding all present and former terminalling and retail facilities.

Attached for your forwarding to the Regulatory Affairs Group is a summary describing the locations where sludge was disposed of and the approximate time period when these events occurred. It also notes which present or past employee provided this information.

The attached recap sheet reflects that sludge burial definitely occurred in Curtis Bay, Clinton Street (Baltimore), Richmond, Norfolk, Roanoke, Charlotte, Spartanburg, Doraville and Birmingham.

We also forward the individual responses obtained from each district that reflects detailed information as to the total number of employees interviewed.

We suggest that the physical preparation of the notification forms, in accordance with the applicable regulations of the superfund, be made and submitted to the appropriate Federal Department by Mr. Mampe's group.


A. M. de Lange

AMD/k.db

Enclosure

cc: Mr. P. B. Onderdonk, w/att.

TERMINAL OPERATIONS DEPARTMENT
SUPERFUND NOTIFICATION
MAY, 1981

ORIGINAL

(Red)

MAY 27 1981

MICROFILM

E. P. MAMPE

AUG 10 1981

Location where Leaded
Tank Bottoms are Buried

Employee
Interviewed

Description

MARYLAND

Clinton Street
Baltimore, Md.

J. Gibson

Leaded sludge bottoms were deposited throughout terminal by burial or spreading method from 1947 thru 1968.

6000 Pennington Ave.
Baltimore, Md. 21226

J. Gibson

Leaded sludge bottoms were spread over west side dike wall and tank bottom areas from 1968 thru 1974.

RECEIVED

MAY 27 1981

ORIGINAL
(LMD)

MAY 21 1981

TO MR. J. BRIGHT

DATE

J. A. BRIGHT
MAY 20, 1981

E. P. MAMPE

MICROFILMED

AUG 10 1981

SUBJECT: SUPERFUND NOTIFICATIONS

As a follow up to my letter of 5/11/81 (attached) the Curtis Bay Terminal files have been researched again by the undersigned. Attached please find:

- (1) PO # 9-2018 which is indicative of tank cleaning performed by Atlantic Welders, Inc. (sub contractor Northeast Welders) on 8/21/79. Tank #5 leaded gasoline was cleaned for unleaded storage.
- (2) PO # 0-2110 which is indicative of tank cleaning performed by J & L Industries, Inc. on 7/11/80. Tanks #2 and #3 leaded premium were cleaned for unleaded xtra.
- (3) PO # 0-3561 which is indicative of tank cleaning performed by J&L Industries, Inc. on 10/30/81. Tank #1 leaded regular was cleaned for unleaded xtra. Three 55 gallon drums of leaded sludge wastes were transported to Chemical Waste Management, Emelle, Alabama by J&L Industries under current RCRA Guidelines.
- (4) Drawing No. D-4-402 of Curtis Bay Terminal piping plot plan and key plan indicates sludge pits located between Tank #1 and Tank #2. In an interview with J. Gibson (34 year man) on 5/11/81 he indicates that leaded sludge has not been buried at Curtis Bay since Crown took over in 1968. Per J. Gibson leaded sludge was spread over west side dike wall to air out. I believe drawing indicating sludge pits is a carry over from old Tidewater Oil Co. blue prints prior to Crown's existence.


J.R. Funk

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JRF/ja

cc: T.R. Daly

ORIGINAL

MICROFILMED

AUG 10 1981

TO

MR. T.R. DALY

DATE

MAY 11, 1981

RECEIVED

MAY 11 1981

E. P. MAMPE

SUBJECT:

EPA REPORTING REQUIREMENTS
LEADED SLUDGECLINTON STREET TERMINAL

Per I. Gibson - current employee, from 1947 to 1968 leaded tank bottoms were deposited throughout Clinton Street terminal. Both burial and spreading methods of deposit were used.

CURTIS BAY TERMINAL

1968 - 1974 - Per J. Gibson leaded sludge was spread over west side dike wall and tank bottom areas. Since 1974 through October, 1974 contractors were hauling tank bottoms sludge away from terminal to points unknown. Since Nov. 1980 Tank #1 was cleaned and leaded sludge wastes were transported to Chemical Waste Management, Emelle, Alabama under current RCRA guidelines.

* Contractors used during this period were L. Nadwodny & Sons, Northeast Welders, and J & L Industries.


J.R. Funk

JRF/ja

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RECEIVED

APR 30 1981

DATE APRIL 29, 1981

TO

MR. E. P. MAMPE

E. P. MAMPE

SUBJECT: SUPERFUND LEGISLATION - NOTIFICATION REQUIREMENTS

I have no direct knowledge nor records indicating hazardous waste disposal by Crown. When I handled product supply during the 1950's I was told by terminal personnel that they would have to lease special equipment to clean inside a tank and would probably bury the sludge. These comments were from our Norfolk and Clinton St. terminals. Later comments were that tank cleaning was done by contractors.



C. J. Horner

Manager-Joint Ventures

CJH:lst

cc: Mr. G. W. Jandacek

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ATTACHMENT B

METHODS OF DISPOSING OF SLUDGE FROM
LEADED GASOLINE STORAGE TANKS

H. K. BALL

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METHODS OF DISPOSING OF SLUDGE FROM
LEADED GASOLINE STORAGE TANKS †

H. K. BALL *

ABSTRACT

For many years sludge from leaded gasoline storage tanks has been successfully disposed of by burial. Recently, inquiries have been received from a number of oil companies asking for an alternate method of sludge disposal. Available space for sludge pits is being exhausted, and in some areas high water tables offer disposal problems.

Various methods of sludge disposal were studied, including roasting, chemical treatment, leaching, etc. These methods, although effective, all have drawbacks.

Since the early 1930's, the potential toxicity of sludge from leaded gasoline storage tanks has been recognized. Therefore, it has been necessary to dispose of sludge by a method which would avoid harmful effects both from skin contact or inhalation of its vapors. Burial met these requirements.

In recent years, however, an increasing number of inquiries have been received from oil companies asking for an alternate method of sludge disposal because available space for sludge pits is being exhausted and in some areas high water tables create disposal problems.

In looking for alternate methods of sludge disposal, the basic requirements could be defined as follows:

1. Sludge should be reduced in the least possible time to a nonhazardous condition.
2. The method should be economical and should apply to tanks in all areas—refinery, terminal, bulk storage, etc.
3. The method should require no particular skill or technical assistance to perform it safely.

Possible methods for disposing of sludge were considered as follows:

1. *Chemical Methods* (applied after removing sludge from tank)

- a. Aqueous potassium permanganate.
- b. Sodium hypochlorite.
- c. Chlorine in acetic acid.
- d. Iodine solution.

2. *Thermal Methods*

a. *Ignition*: Place a thin layer of sludge into a shallow but long and wide trench, cover with kerosine, and ignite with a torch. The heating must be for a sufficiently long period of time to vaporize all liquid from the sludge and heat the dried mass to approximately 150 C.

b. *Roasting*: Place contaminated sludge on a large steel plate and heat with a flame to 150 C to 200 C. Heating may be applied in any manner.

It was learned that the tetraethyllead would dissipate after spreading leaded sludge in a 3-in. layer. From tests that have been conducted to date, it appears that a weathering period of 30 days is adequate to reduce most sludges to a lead level of below 20 ppm, which is considered safe. Factors such as freezing weather could extend this period somewhat depending upon conditions.

Data are still being accumulated to further support this program.

3. *Physical Methods (Weathering Sludge)*: Spread sludge in a thin layer and allow exposure to the elements.

4. *Combination of Preceding Methods*: Weathering followed by ignition or roasting.

5. *Miscellaneous Methods*: A host of other chemical decontaminants such as sulfuryl chloride in kerosine, hydrochloric acid, hydrogen peroxide, etc. were rejected because of secondary problems associated with use of these decontaminants.

Decontamination of sludge prior to removal from the gasoline storage tank (chlorine in the water wash) was rejected because of corrosion problems.

Advantages and Disadvantages of Various Methods

In the course of our investigations, it was agreed that:

1. Decontaminating sludge with chemicals (chlorine in acetic acid, iodine in potassium iodide solution, bleach, and potassium permanganate) is only partially effective and quite expensive. The chemicals react with other components of gasoline tank sludge and lose some of their effectiveness. Thorough mixing is essential for proper contact. This method is not considered feasible because of the difficulty of producing intimate contact of chemicals with sludge, the possible hazards of handling the chemicals, their cost, manpower requirements, and special equipment that may be required.

2. The most effective methods for decontaminating gasoline storage tank sludge are "thermal methods." Heating sludge to 200 C for 20 min after all moisture is removed reduces the tetraethyllead (TEL) content down to 0.00002 percent by weight. Heating may be carried out in a number of ways. However, the "thermal method" is only applicable when special facilities are available. The method may well require the removal of the sludge to a remote location involving rehandling of the material. Except under special circumstances, the economics do not appear good.

* Ethyl Corp., New York, N. Y.

† Presented to a session on operating practices during the 28th Midyear Meeting of the American Petroleum Institute's Division of Refining, in the Benjamin Franklin Hotel, Philadelphia, Pa., May 14, 1968; presiding, W. T. Askew, Sun Oil Co., Philadelphia, Pa.

3. Spreading sludge in a thin layer on the ground and allowing it to "weather" has been proven an effective procedure for decontaminating sludge. Tests show that under Gulf Coast weather conditions, this method was superior to chemical treatment. This also proved true in mid-Continent area tests. In colder parts of the country weathering may be less effective as the sludge is in an inactive state because of low temperatures. However, as the weather moderates the weathering will continue.

Chemical Methods

The chemical methods were tested by removing portions (125 g each) from a large sludge sample and analyzing for TEL before and after treatment by methods shown in Table 1. The results from this test (Table 1) demonstrate that treating with halogens (which react instantly when in contact with TEL), potassium permanganate, and bleach considerably reduces the TEL content. *However, in no case did the decontaminants remove all TEL.*

A secondary problem presented itself in that all chemical decontaminants reacted with other components of sludge, presumably iron in its lower state of oxidation and organic petroleum compounds. This tends to use up the decontaminant.

Mixing sludge with chemical decontaminants appears to be necessary to improve contact with TEL. When potassium permanganate crystals were placed on the surface of sludge contained in a glass vessel, solution and diffusion of permanganate was extremely slow and not complete. Furthermore, the dilute permanganate solution was reduced by impurities in sludge more rapidly than it reacted with TEL.

Further tests to decontaminate sludge with potassium permanganate (1 lb permanganate to 99 lb sludge) proved unsuccessful. Even after stirring for 1 hr the TEL content was only reduced to 0.0022 percent by weight. Also, all potassium permanganate was reduced by this particular sludge sample. Based upon a cost of potassium permanganate at 26 cents per pound, this method appears to be quite expensive (approximately \$8.50 per cubic yard of sludge for permanganate only. The equipment and labor costs would be even higher).

The addition of 0.1 percent by weight TEL to a single sample of sludge originally containing approximately 0.01 percent by weight TEL was readily decontaminated with chlorine in acetic acid to 0.0025 percent by weight of TEL. Apparently, TEL added to sludge is easy to decontaminate whereas TEL originally present in sludge is more difficult to decontaminate.

Thermal Methods

Thermal methods of *roasting* and *ignition* were tested and found to be effective, especially the former. A 300-g sample of sludge and a 2-lb sample of sludge were placed into steel trays and heated for 1 hr and 20 min. The temperature of the sludge remained below 100 C for the first hour (because of water on the sludge). During the next 20 min the temperature increased to 150 C on the surface and 200 C on the bottom layer.

The TEL content dropped to 0.00001 and 0.00002 percent by weight, respectively. This treatment appeared to be very promising because TEL and all other organic lead compounds are completely destroyed by heating.

The *ignition* method was tested by placing a 1-in. layer of wet sludge* in a tray and covering it with a thin layer of kerosine. The kerosine was then ignited. A relatively large volume of kerosine (1 volume kerosine to 4 volumes sludge) was needed to volatilize the moisture and reduce the TEL content to 0.0002 percent by weight. Two additions of kerosine were required to remove the moisture, and a third addition was necessary to increase the temperature of the sludge to a maximum of 145 C.

Burning air-dried sludge* with a kerosine and oil mixture reduced the TEL content to 0.00003 percent by weight. The use of kerosine only is not very satisfactory when using a deep bed of sludge (2 in.). Kerosine liquid and vapor prevent a rapid rise in the temperature of the sludge. The sludge bed acts as a wick, and if the temperature of the combustible vapor is not great enough, thermal decomposition of TEL is very slow. The use of a fuel with a higher boiling point is more effective for increasing the temperature of the sludge. For this reason, heating sludge with a flame or "roasting" is preferable to heating with a volatile solvent. The TEL content of a flame-heated sludge* sample (overhead flame) dropped to 0.00001 percent by weight.

Sludge-Weathering Method

In 1955 the Ethyl Corporation started a series of field tests involving the cleaning of leaded gasoline storage tanks. We were interested in what might be the maximum exposure hazard of lead vapors to personnel in a tank having contained leaded gasoline, and we were also interested in the nature of the sludge being removed from a tank. As a part of our study, sludge samples were sent to our chemical research and development laboratory in Baton Rouge for analysis. Sludge in glass bottles, standing in the laboratory before being analyzed, was found to stratify in layers composed of solids, gasoline, and water. It was further found that by centrifuging these samples, the TEL in the sludge can be removed.

* 0.012 percent by weight TEL.

TABLE 1—Decontamination by Chemicals of Gasoline Storage Tank Sludge

Decontaminant	Active Part of Decontaminant, 1 Part to 99 Parts Sludge (Weight)	Contact Time (Days)	Unreacted TEL Percent of Sludge (Weight)
None (control sample)	0.0120
Chlorine in acetic acid	Chlorine	3	0.0022
Iodine-potassium iodide	Iodine	3	0.0006
Potassium permanganate ..	Permanganate	3	0.0023*
Bleach	Bleach	3	0.0049

* Constant stirring of a similar mixture for 1 hr resulted in a value of 0.0022 percent.

diffused into the atmosphere. Further checking by the laboratory group showed that the level of lead in sludge exposed to the elements (with or without the sun being present) rapidly declined.

For this "weathering" process to be a satisfactory method of decontaminating sludge two questions had to be answered.

1. How low did the level have to be reduced to make the sludge safe?
2. How long would it take?

To answer the first of these it was reasoned that the sludge is safe if it will not contaminate the air above it. Tests were then made to see what the LIA (lead-in-air) values were in the air above "weathering" sludge. The results showed that the values are low at all times, even with no apparent wind. This meant that the sludge, as far as air contamination is concerned, is essentially safe as soon as it is spread in the open. To be on the safe side, however, Ethyl Corporation has set a figure at 20 ppm of organic lead as the limit in the

it has been "weathered."

In the early studies, sludge levels of various thicknesses were tried over a period of time. These are shown in Fig. 1 through Fig. 4. In addition to placing these on the ground, some were placed on steel plate with no apparent difference. These were small-scale tests.

Following this, full-scale tests were carried out at tank cleanings, two of which are shown in Tables 2 and 3.

The LIA values remained almost constant for the duration of both tests even though the lead content of the sludge was disappearing (Table 3).

From the LIA data, it was concluded that there is no danger of inhaling a harmful quantity of lead, provided there is nothing to restrict normal air movement.

The lead content of the sludge in about 3 weeks time dropped 90 percent or more in the 4-in.-thick patches (Fig. 3) and 98 percent or more in the 2-in.-thick patches (Fig. 2).

Based on data such as this, it was decided that it would be entirely satisfactory to dispose of the con-

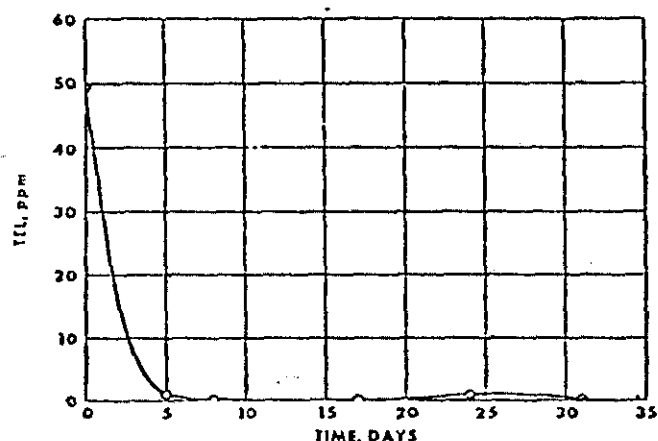


FIG. 1—One-Inch-Thick Sludge Weathered on Ground.

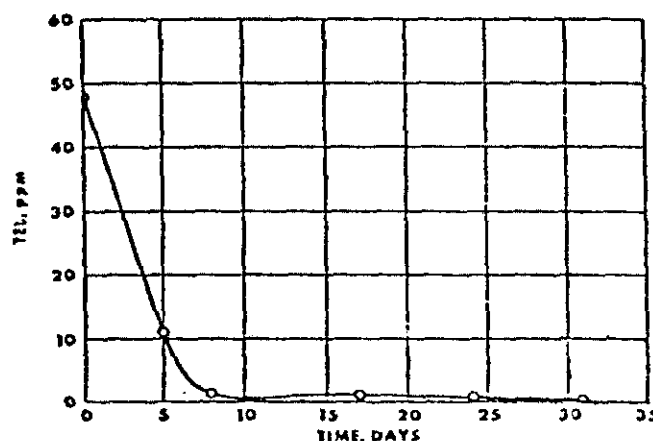


FIG. 3—Four-Inch-Thick Sludge Weathered on Ground.

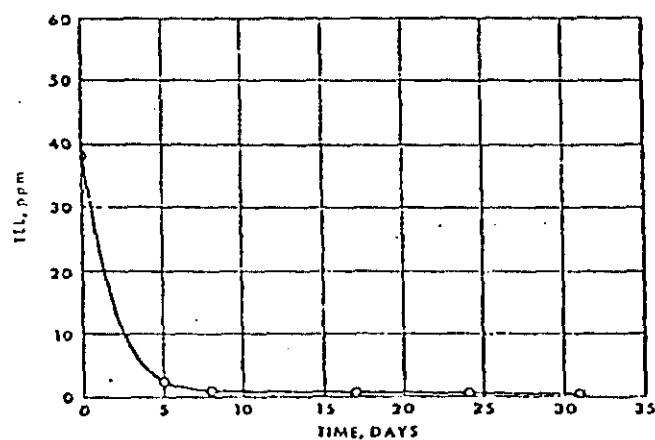


FIG. 2—Two-Inch-Thick Sludge Weathered on Ground.

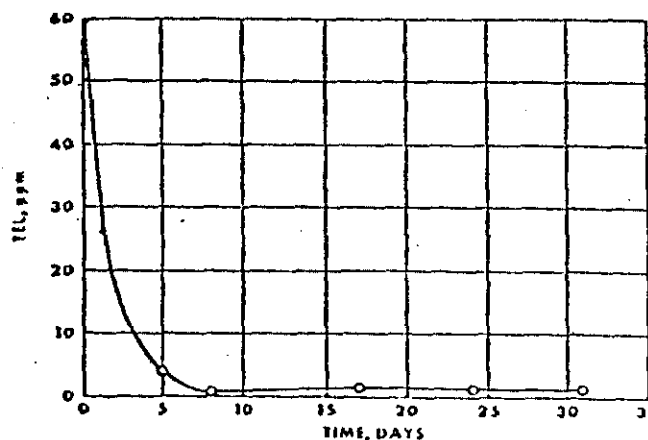


FIG. 4—Two-Inch-Thick Sludge Weathered on Steel Plate.

tamination in sludge by weathering for a period of 30 days.

As this program continues, considerably more data is being accumulated to substantiate our findings. To date all data obtained has proved our original conclusions to be correct.

The following procedure was developed for disposal of sludge so that a uniform method would be followed in arriving at a satisfactory completion of a sludge-weathering program:

1. Location of disposal area:

a. The site selected for sludge disposal should be in a remote part of the property and within property limits where it can be fenced off from the public. It should be located away from buildings. If the sludge is spread near the tank being cleaned, it should be outside the surrounding firewall, so that the possibility of gasoline vapors affecting the tank cleaning operations will be eliminated.

b. The disposal area should be located so that personnel working in, on, or around the tank will not get into the spread-out sludge.

c. It can be a bare ground, grass, or concrete surface.

d. It must be fairly smooth and well drained so that water will not stand on it.

e. The total area, whether in one or several patches, must be sufficiently large to permit spreading the sludge

TABLE 2—Typical Weathering Results

Weathering Time (Days)	TEL Content in Sludge in Parts Per Million	
	Two-Inch- Thick Patch	Four-Inch- Thick Patch
0	38.0	48.0
5	2.9	10.6
8	1.1	2.3
17	0.7	2.0
24	0.6	0.7
31	0.5	0.3

TABLE 3—Typical Lead-in-Air Readings

Weathering Time (Days)	Micrograms TEL per Cubic Foot of Air	
	Three Inches Above Sludge	Waist Level Above Sludge
1	1	1
2	1	1
5	1	1

in a layer not over 3 in. thick. The total area required will, of course, be determined by the amount of sludge in the tank.

f. It should be so located that air can circulate freely over the surface of the sludge. Exposure to the sun is desirable but not mandatory.

2. Remove sludge from the tank in the usual manner following the safety recommendations approved by the American Petroleum Institute.

3. The sludge can be moved from the tank to the spreading area in available plant equipment. Wheelbarrows, buckets, or other small containers may be used for moving it a short distance. Dump trucks, lugger buckets, etc. may be used for longer distances. The containers used should be metal. After use, they should be washed thoroughly with water.

4. The sludge can be spread with hoes, rakes, or shovels. It should be spread as uniformly as possible to a maximum thickness of 3 in. If the area permits it, a thinner spreading is desirable.

5. Personnel who handle and spread the sludge should be dressed in special clothing as recommended for tank cleaning. Masks will not usually be necessary unless there is no air movement and vapors can be detected by odor at face level.

6. After the spreading is completed the sludge patch or patches should be roped off and marked so that no one will walk through or stand in the sludge.

7. The spread sludge should be left for at least four weeks. After that it may be treated as any other non-toxic waste material. It is satisfactory to remove signs, fences, etc. and leave the sludge in the preselected area permanently. The four-week weathering period applies when the ambient temperature is above 32 F. Therefore, if temperatures under 32 F exist during the period of weathering, this period of subfreezing temperatures should not be included in the recommended four weeks of weathering.

8. Whenever the weathered sludge analyzes 0.002 percent by weight (20 ppm) organic lead or less, it may be considered safe and the sludge may then be treated as any other nonhazardous waste material.

To date we have examined over 100 weathered samples taken from tank cleanings and have definite results on 38. These weathered satisfactorily, the organic lead being reduced to less than 20 ppm. A number of samples had to be ruled out because we had no base line to start with, although we have reason to believe that these did weather satisfactorily.

This unquestionably is a radical departure from the early and original method of sludge burial. The new method was brought about by necessity; and, very fortunately, because of the curiosity of our people in our chemical research and development laboratories, we were able to bring to the field a method that, judging from figures received to date, is going to solve a lot of our sludge problems.

We are preparing a more detailed paper on some of the intricacies involved which, hopefully, should be published in several months.

ACKNOWLEDGMENT

The author wishes to acknowledge the assistance of Mr. Louis J. Snyder of the chemical research and development department of Ethyl Corporation who is responsible for directing the laboratory work which was done in connection with this study.

sludge disposal

One of two methods is commonly used for disposing of sludge from leaded-gasoline storage tanks. They are "burying" or "weathering". Both methods are recognized by API RP-2015. There are other effective methods, such as "thermal" methods, but they are not commonly used because special facilities are required.

BURYING—In this method a pit is dug either manually or by bulldozer. The sludge is dumped into the pit and then covered with 1 to 2 feet of fresh earth. This area should be adequately marked so that no one inadvertently uncovers the buried sludge. Experience indicates that buried organic lead compounds decompose very slowly to inorganic materials. If a ditch or trench is dug through the sludge pit, organic lead compounds may be uncovered.

WEATHERING—This method is safe, effective, and economical. Laboratory tests show that organic lead compounds in sludge when exposed to the elements will decompose to inorganic lead compounds. Laboratory and field tests show that if the procedures, as outlined in this section are followed, there will be no special air, soil, or water contamination problem. The basis for this is: (1) The total quantity of organic lead in a sludge weathering bed is small. Concentrations rarely exceed the normal range of 0.1 to 0.4 pounds organic lead per ton of sludge. (2) Regardless of the concentrations or total quantity of lead in the sludge weathering bed, the amount of organic lead exposed to the atmosphere at the surface of the weathering bed is very small. Lead-in-air tests taken over or immediately downwind of the weathering bed indicate that lead-in-air concentrations do not exceed the threshold limit value for organic lead. This indicates the atmosphere in the area is essentially safe from an occupational health hazard standpoint as soon as the sludge is spread. (3) Organic lead compounds are dissolved in the gasoline hydrocarbon fractions of the sludge and do not migrate into water or soil. Thus, the physical properties of organic lead in sludge in the weathering beds are such that vaporization, absorption in water or soil do not constitute a health problem.



ETHYL CORPORATION
PETROLEUM CHEMICALS DIVISION

REF ID: A66111

**"WEATHERING" PROCEDURE
FOR DISPOSAL OF SLUDGE
FROM LEADED GASOLINE
STORAGE TANKS**

1. Location of disposal area:
 - a. The site selected for sludge disposal should be in a remote part of the tank owners property and within property limits where it can be fenced off from the public. It should be located away from buildings. If the sludge is spread near the tank being cleaned, it should be outside the surrounding firewall, so that the possibility of gasoline vapors affecting the tank cleaning operations will be eliminated.
 - b. The disposal area should be located so that personnel working in, on, or around the tank will not get into the spreadout sludge.
 - c. It can be a bare ground, grass or concrete surface.
 - d. It must be fairly smooth and well drained so that water will not stand on it.
 - e. The total area, whether in one or several patches, must be sufficiently large to permit spreading the sludge in a layer not over 3" thick. The total area required will, of course, be determined by the amount of sludge in the tank.
 - f. It should be so located that air can circulate freely over the surface of the sludge. Exposure to the sun is desirable but not mandatory.
2. Remove sludge from the tank in the usual manner following the safety recommendations approved by API.
3. The sludge can be moved from the tank to the spreading area in available plant equipment. Wheelbarrows, buckets or other small containers may be used for moving it a short distance. Dump trucks, lugger buckets, etc., may be used for longer distances. The containers used should be metal. After use, they should be washed thoroughly with water.
4. The sludge can be spread with hoes, rakes or shovels. It should be spread as uniformly as possible to a *maximum thickness of three inches*. If the area permits it, a thinner spreading is desirable.
5. Personnel handling and spreading the sludge should be dressed in special clothing as recommended for tank cleaning. Normally, masks will not be necessary if there is air movement.
6. After the spreading is completed the sludge patch or patches should be roped off and marked so that no one will walk through or stand in the sludge.
7. While sludge will normally weather within four weeks when the sludge temperature is above 32 degrees F, lead-in-sludge tests should be made before declaring it a nontoxic waste material. The number of days during which sludge temperatures are 32 degrees F or lower should be excluded from the four-week weathering period. If after the four-week weathering period the organic lead content is 20 parts per million or less, 0.002 weight percent, the sludge may then be treated as any other nontoxic waste material. It is then satisfactory to remove signs and fences. The sludge should remain in the preselected area.



USGS
Baltimore, East, Md.
SE/4 Balto. 15' quad.
N3915 - W7630/7.5
1953 (Photorevised 1966)
FERRY BAR CHANNEL (EAST SECTION)

Point Breeze

CURTIS BAY
5-62 LINE

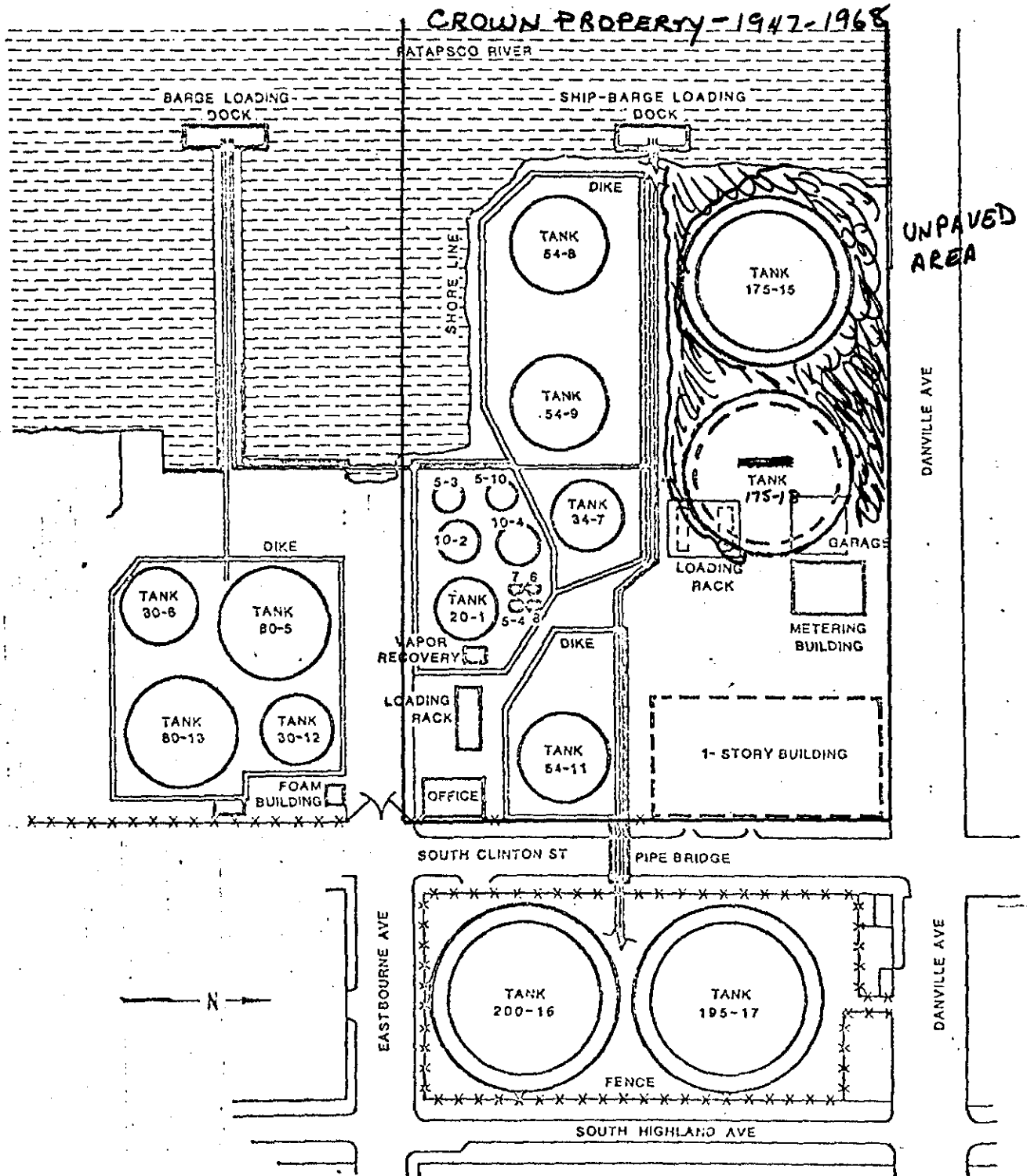
163 157 164 166

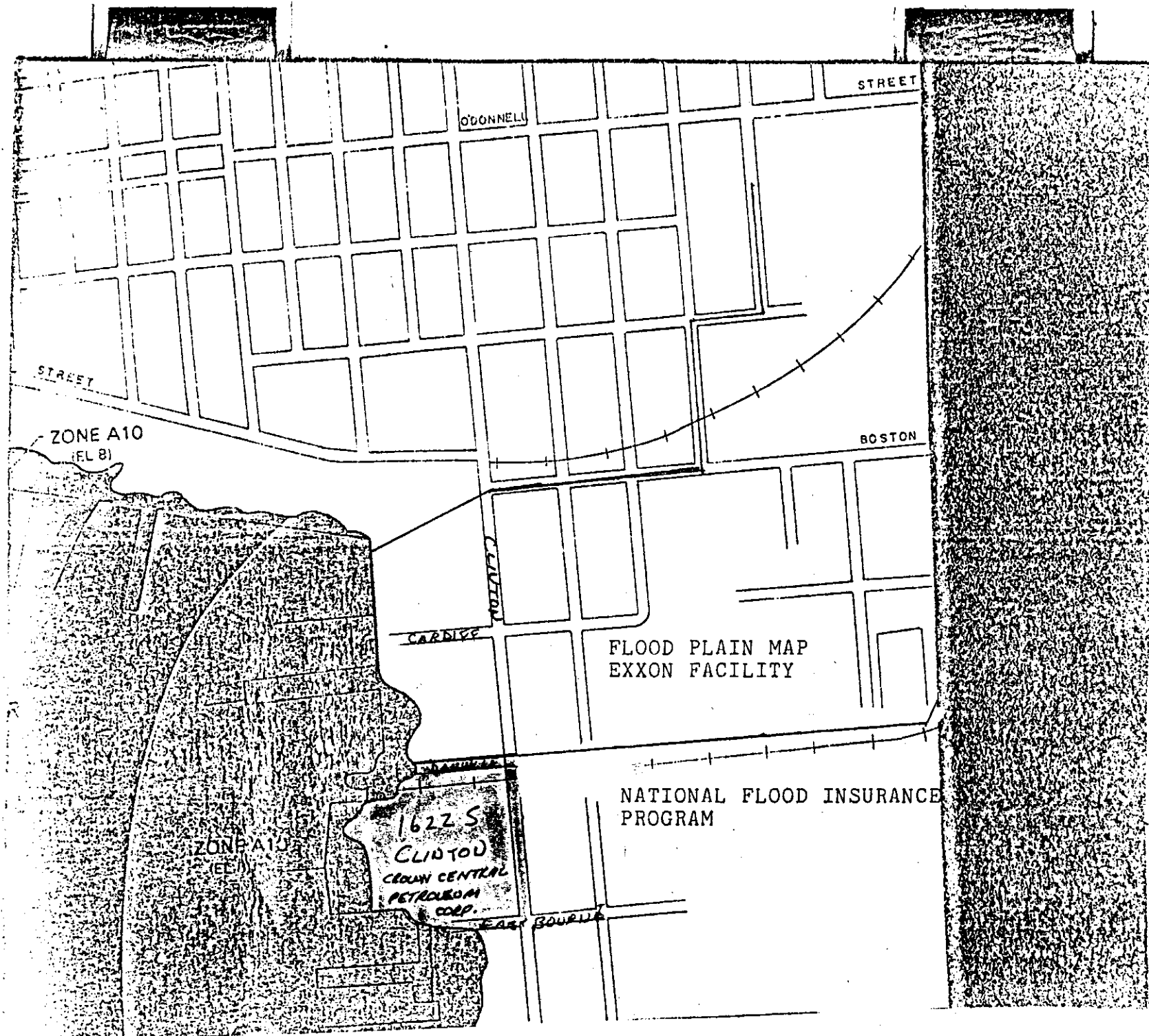
ORIGINAL
(100)

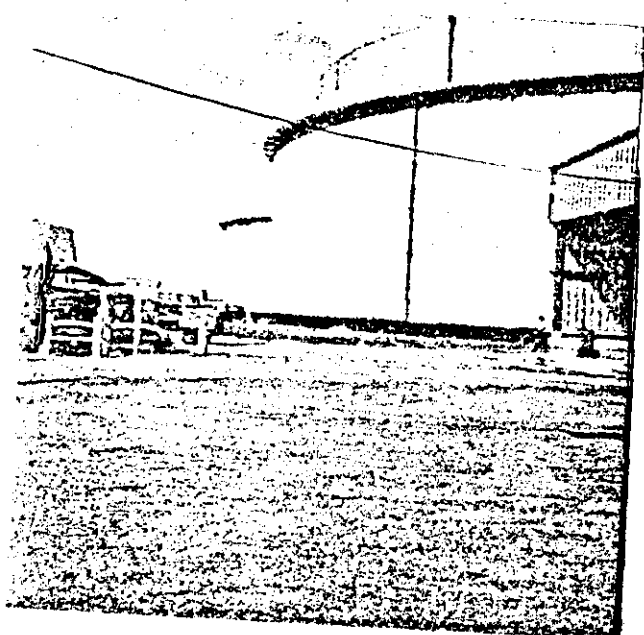
FIGURE 6

PETROLEUM FUEL & TERMINAL COMPANY

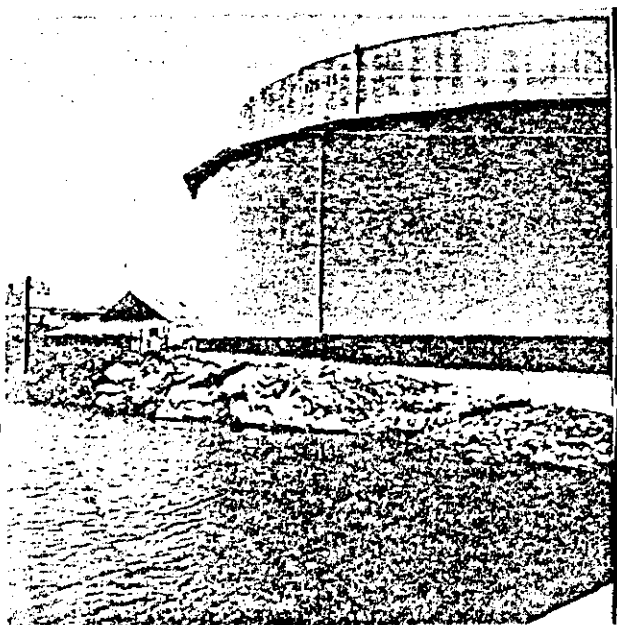
BALTIMORE TERMINAL
BALTIMORE, MARYLAND





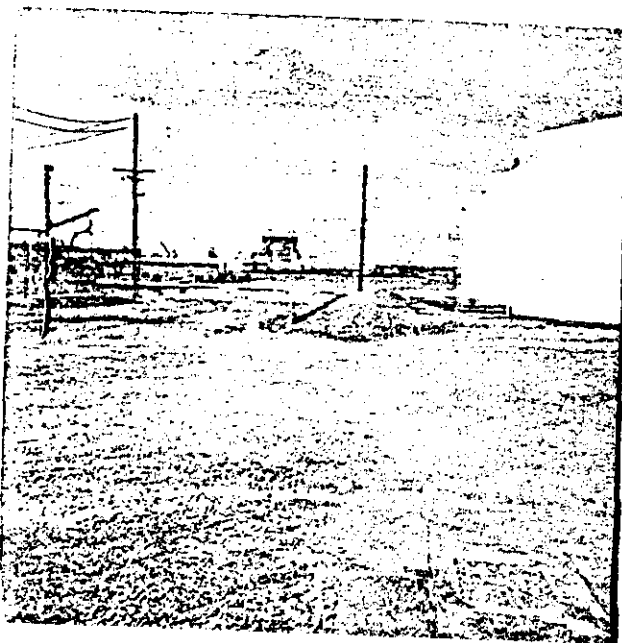


TWO 175000 BBL TANKS ERECTED BY
PETROLEUM FUEL AND TERMINAL CORP.
OVER "RUBBLE FILL" WHICH ALLEGEDLY
EXISTED ON PROPERTY FROM LATE 19TH
CENTURY.

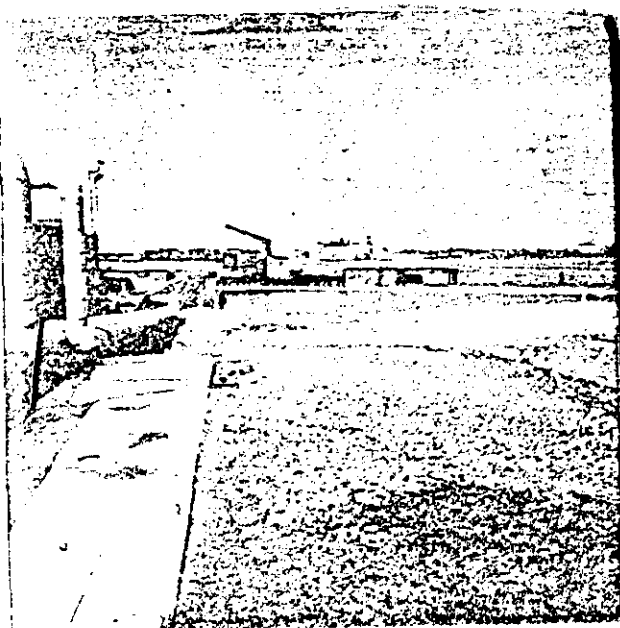


"ORIGINAL" SHORELINE AS EXISTED WHEN
PETROLEUM FUEL AND TERMINAL CORP.
PURCHASED PROPERTY IN 1978 FROM
CROWN

Photographs



VIEW OF SITE PROPERTY LINE WHICH WAS IN EFFECT AT TIME OF SALE BY CROWN. THE CONCRETE SQUARE AT LOWER RIGHT WAS SITE OF BOUNDARY POST. THE AREA TO THE LEFT OF POST WAS SUBSEQUENTLY PURCHASED FROM GULF



THE DOCK IS THE ORIGINAL CROWN STRUCTURE. THE UNPAVED GROUND IS AS ORIGINALLY PURCHASED FROM CROWN